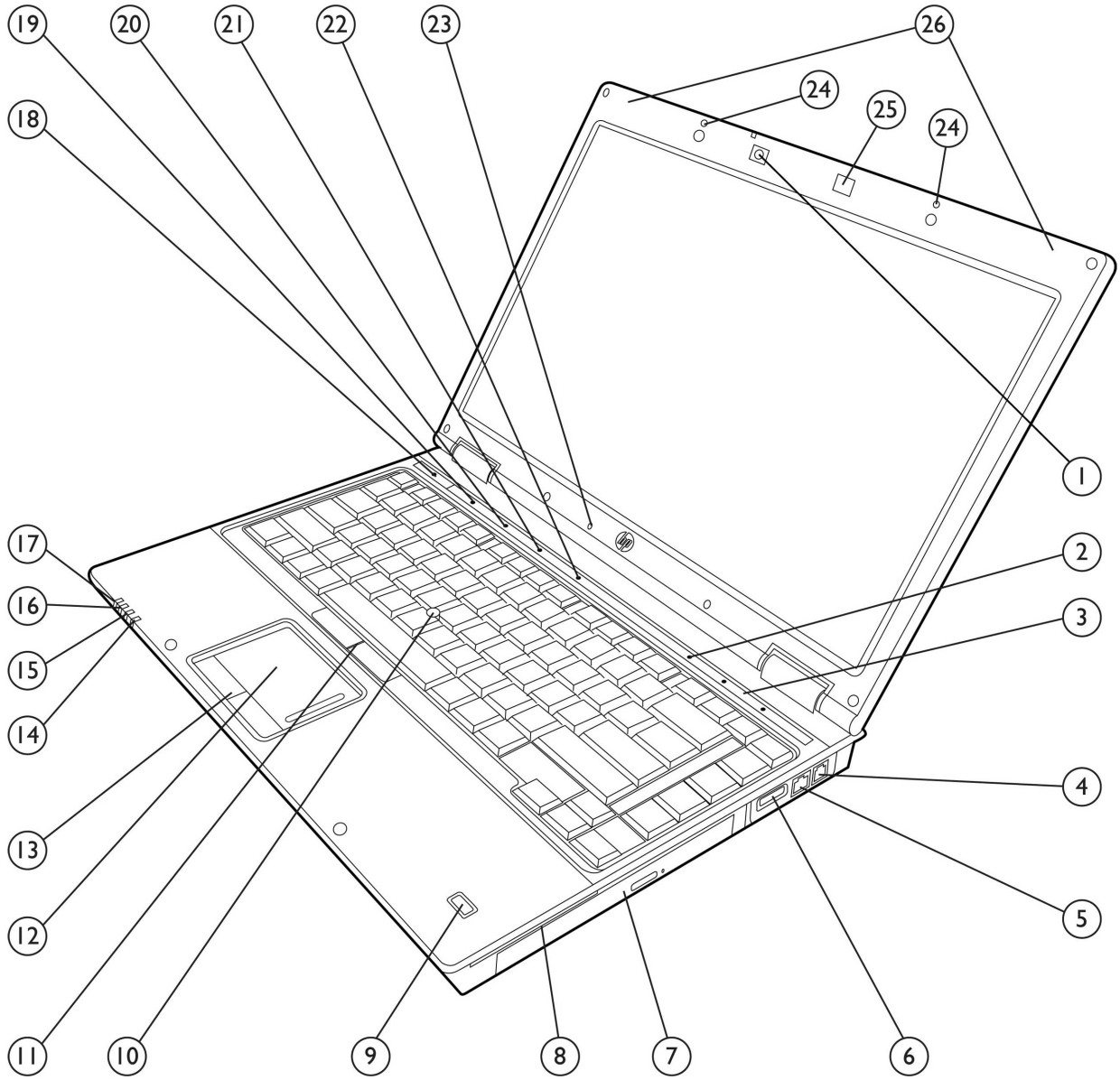
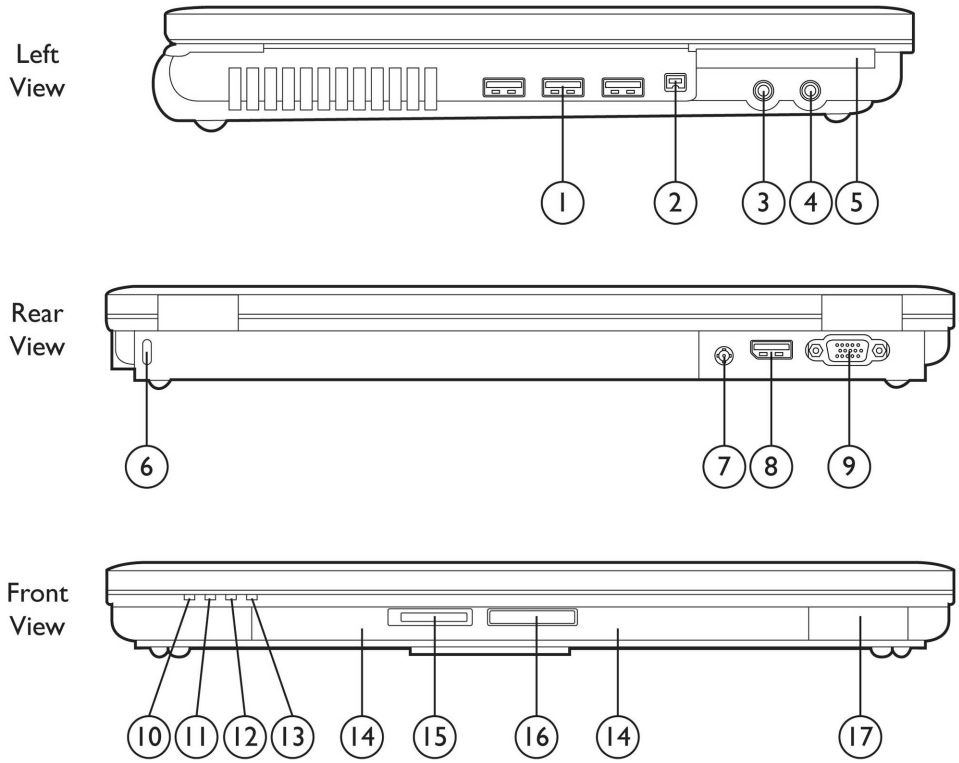


1. Optional 2 MP Webcam
2. Volume mute button with LED indicator
3. Volume up/down buttons with LED indicators
4. RJ-11/modem port
5. RJ-45/Ethernet port
6. eSATA/USB 2.0 Combo port
7. Upgrade Bay (optical drive, 2nd hard drive, weight saver)
8. Integrated Smart Card Reader
9. Optional HP Fingerprint Sensor
14. Hard drive activity / HP 3D DriveGuard LED indicator
15. Battery charging LED indicator
16. Power/standby LED indicator
17. Wireless on/off LED indicator
18. Power button with LED indicator
19. HP QuickLook 3 button with LED indicator
20. HP QuickWeb button with LED indicator
21. Wireless on/off button with LED indicator
22. Touchpad on/off button

Overview

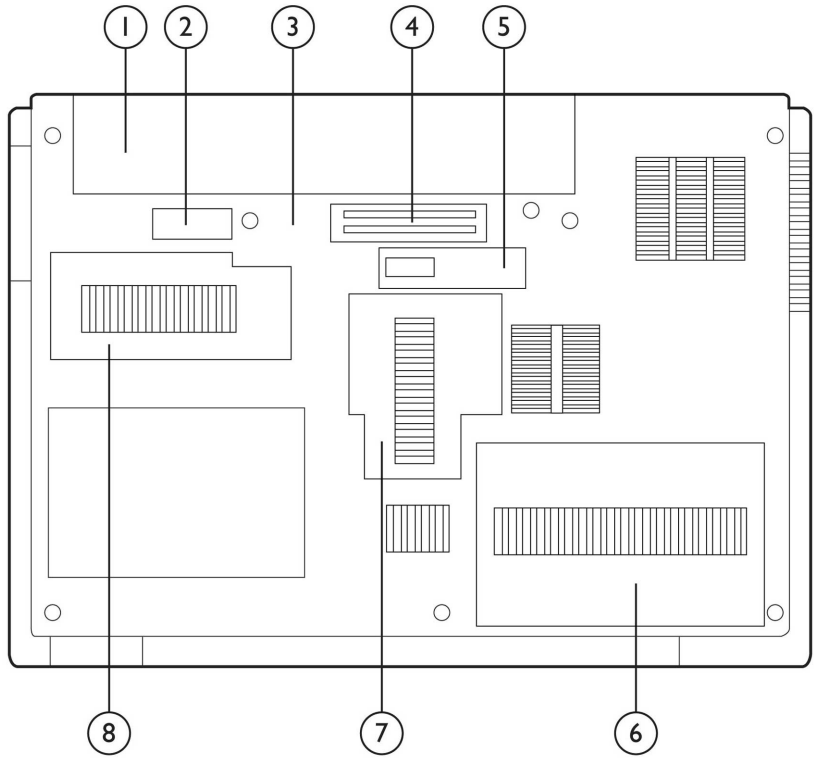
10. Pointstick
11. Pointstick buttons
12. Touchpad with scroll zone
13. Touchpad buttons
23. Ambient Light Sensor
24. Dual-microphone array
25. HP NightLight with on/off button
26. WLAN and WWAN antennas



1. (3) USB 2.0 ports
2. 1394a port
3. Stereo microphone in
4. Stereo headphone/line out
5. ExpressCard/54 slot
6. Kensington Lock slot
7. Power connector
8. DisplayPort
9. VGA connector (external monitor/projector)
10. Wireless on/off LED indicator
11. Power/standby LED indicator
12. Battery charging LED indicator
13. Hard drive activity / HP 3D DriveGuard LED
14. Integrated stereo speakers
15. Secure Digital (SD) slot
16. Display release latch
17. Bluetooth module compartment

Overview

Bottom View



Bottom View

1. Battery bay
2. Battery release latch
3. SIM slot for WWAN (select models) – inside battery bay
4. Docking connector
5. Secondary battery connector
6. Hard drive bay
7. Memory module compartment
8. WLAN/WWAN module compartment

At A Glance

- Genuine Windows 7 versions or FreeDOS
- NVIDIA NVS 3100M graphics with 512 MB dedicated memory or Intel Graphics Media Accelerator HD graphics
- Intel® Core™ i7 or Core i5 processor with Intel Turbo Boost Technology
- DisplayPort for external monitors, and eSATA/USB 2.0 Combo port for external storage
- Industrial, business rugged construction features a full magnesium alloy chassis, magnesium/aluminum display enclosure, metal alloy hinges, brushed aluminum with platinum finish; designed to meet the military standard Mil-Std-810G for vibration, dust, humidity, altitude, and high and low temperature operation*
- Widescreen 14.0-inch diagonal 16:9 LED-backlit HD or HD+ display with Ambient Light Sensor and optional HP Privacy Filter
- HP Power Assistant to conserve power, increase battery run-time, monitor power needs, report workforce power consumption
- Touch-sensitive controls for HP QuickLook 3 (instant access to email, calendar, contacts and tasks), HP QuickWeb, wireless on/off, mute, volume down, volume up
- Choice of 6-cell, 9-cell, or HP Long Life primary battery, plus optional external batteries – HP Ultra-Capacity Battery, HP Extended Life Battery
- Choice of 7200 rpm user-removable hard drive up to 500 GB with HP 3D DriveGuard protection, or 160/256 GB Solid State Drive
- Flexible wireless connectivity options:
  - Integrated HP un2420 EV-DO/HSPA Mobile Broadband Module provides worldwide Gobi mobile Internet technology

Overview

with GPS
  - Integrated Intel Centrino® Ultimate-N / Advanced-N 6000 Series 802.11 a/b/g/n wireless LAN module; or Broadcom b/g wireless LAN module
  - Bluetooth® v2.1
- Optional 2 MP Webcam, HP Night Light
- Enhanced security features including integrated Smart Card Reader, HP ProtectTools, Computrace LoJack Pro ready, HP SpareKey, HP Disk Sanitizer, TPM 1.2 ;** optional HP Fingerprint Sensor, and optional HP Privacy Filter
- Upgrade Bay for easy optical drive upgrade or optional second hard drive for RAID 1 Mirroring or RAID 0 Striping
- Dual pointing devices (touchpad with scroll zone and pointstick)
- ExpressCard/54 slot, Secure Digital (SD) slot

* Testing was not intended to demonstrate fitness for DOD contracts requirements or for military use. Test results are not a guarantee of future performance under these test conditions.
** TPM module disabled where not permitted by law (for example, Russia and China).

Standard Features

Processors

Intel Quad-Core Processor (models with discrete graphics only)

Intel Core i7-740QM Processor (1.73 GHz, 6 MB L3 cache)*
Up to 2.93 GHz with Intel Turbo Boost Technology

Intel Core i7-720QM Processor (1.60 GHz, 6 MB L3 cache)*
Up to 2.8 GHz with Intel Turbo Boost Technology

Intel Dual-Core Processors

Intel Core i7-640M Processor (2.80 GHz, 4 MB L3 cache)*
Up to 3.46 GHz with Intel Turbo Boost Technology

Intel Core i7-620M Processor (2.66 GHz, 4 MB L3 cache)*
Up to 3.33 GHz with Intel Turbo Boost Technology

Intel Core i5-580M Processor (2.66 GHz, 3 MB L3 cache)*
Up to 3.33 GHz with Intel Turbo Boost Technology

Intel Core i5-560M Processor (2.66 GHz, 3 MB L3 cache)*
Up to 3.20 GHz with Intel Turbo Boost Technology

Intel Core i5-540M Processor (2.53 GHz, 3 MB L3 cache)*
Up to 3.06 GHz with Intel Turbo Boost Technology

Intel Core i5-520M Processor (2.4 GHz, 3 MB L3 cache)*
Up to 2.93 GHz with Intel Turbo Boost Technology

* Intel's numbering is not a measurement of higher performance.
NOTE: Processor speed denotes maximum performance mode; processors will run at lower speeds in battery optimization mode.

Operating System

Preinstalled	Genuine Windows 7 Professional Edition 32* Genuine Windows 7 Professional Edition 64* FreeDOS
Supported	Genuine Windows Vista Enterprise 32** Genuine Windows Vista Enterprise 64** Genuine Windows Vista Business 64** Genuine Windows Vista Business 32** Genuine Windows XP Professional 64
Certified	SuSE Linux Enterprise Desktop 11

* System may require upgraded and/or separately purchased hardware and/or a DVD drive to install the Windows 7 software and take full advantage of Windows 7 functionality. See: http://www.microsoft.com/windows/windows-7/ for details.

** Certain Windows Vista product features require advanced or additional hardware. See: http://www.microsoft.com/windowsvista/getready/hardwarereqs.mspx and http://www.microsoft.com/windowsvista/getready/capable.mspx for details. Windows Vista Upgrade Advisor can help you determine which features of Windows Vista will run on your computer. To download the tool, visit: http://www.windowsvista.com/upgradeadvisor.

† Windows XP Professional is preinstalled on this system and includes end user rights and media for Windows 7 Professional. You may only use one version at a time. You must back up all data (files, photos, etc.) before uninstalling and installing operating systems to avoid loss of your data.

Standard Features

Chipset	Mobile Intel QM57 Express Chipset
Intel Core i5 with vPro/Core i7 with vPro technology capable	Intel Core i5 with vPro and Core i7 with vPro technology is a selectable feature that is available on units configured with an Intel Centrino® Advanced-N 6200 WLAN module and a preinstalled Windows operating system. It provides advances in remote manageability, security, energy efficient performance, and wireless connectivity. Intel Active Management Technology 6.0 (iAMT) offers built-in manageability and proactive security for networked notebook PCs, even when they are powered off* or when the operating system is inoperable. It can help identify threats before they reach the network, isolate infected systems, and update PCs regardless of their power state. *Requires a Windows operating system, network hardware and software, connection with a power source, and a direct (non-VPN) corporate network connection which is either cable or wireless LAN. NOTE: Some functionality of Intel Core i5 with vPro/Core i7 with vPro technology, such as Intel Active Management technology and Intel Virtualization technology, requires additional 3rd party software in order to run. Availability of future "virtual appliances" applications for Intel Core i5 with vPro/Core i7 with vPro technology is dependent on 3rd party software providers. Compatibility with future "virtual appliances" is yet to be determined.
Graphics	Models with discrete graphics: NVIDIA NVS 3100M graphics with 512 MB dedicated gDDR3 video memory Microsoft DirectX 10.1 (Shader Model 4.1) Models with integrated graphics: Intel Graphics Media Accelerator HD Microsoft DirectX 10 (Shader Model 4.0)

Display	Internal	14.0-inch diagonal 16:9 LED-backlit HD anti-glare (1366 x 768 resolution) 14.0-inch diagonal 16:9 LED-backlit HD+ anti-glare (1600 x 900 resolution) Ambient Light Sensor Optional HP Privacy Filter
	External	Up to 32-bit per pixel color depth DisplayPort supports resolutions up to 2560 x 1600, 30-bit color depth at 60 Hz, and full HD (1920 x 1080) monitors, 24-bit color depth at 120 Hz VGA port supports resolutions up to 2048 x 1536 at 75 Hz, and lower resolutions at up to 100 Hz DVI-D (single link) video signal available through DVI port in optional HP Docking Station (sold separately) supports resolutions up to 1600 x 1200 at both full and reduced blanking, and 1920 x 1200 at reduced blanking NOTE: Resolutions are dependent upon monitor capability, and resolution and color depth settings.

Standard Features

Memory	Standard	DDR3 PC3-10600 SDRAM (1333 MHz)* Two SODIMM slots supporting dual-channel memory 1024 MB, 2048 MB, 3072 MB, or 4096 MB
	Maximum	Upgradeable to 8192 MB with 4096 MB SODIMMs in slots 1 and 2
	Dual-channel	Maximized dual-channel performance requires SODIMMs of the same size and speed in both memory slots.

* With some processors, memory bus runs at a maximum of 1066 MHz.

NOTE: Due to the non-industry standard nature of some third-party memory modules, we recommend HP branded memory to ensure compatibility. If you mix memory speeds, the system will perform at the lower memory speed. Full availability of 4 GB or more of memory requires a Windows 64-bit operating system or Linux. With Windows 32-bit operating systems, the amount of usable memory is dependent upon your configuration, so that above 3 GB all memory may not be available due to system resource requirements.

Communications

Integrated Intel Gigabit Network Connection (10/100/1000 NIC)*

56K V.92 modem**

* The term "10/100/1000" or "Gigabit" Ethernet indicates compliance with IEEE standard 802.3ab for Gigabit Ethernet, and does not connote actual operating speed of 1 Gb/s. For high-speed transmission, connection to a Gigabit Ethernet server and network infrastructure is required.

** Designed for downloads from 56K modem compliant sources. Maximum achievable download transmission rates currently do not reach 56 KB/s, and will vary with line conditions. Modem availability is subject to country regulatory approval.

Wireless Devices

Support for a broad range of secure, integrated wireless LAN and wireless WAN options featuring support for the latest industry standards. Broadband Wireless (WWAN) requires a Windows operating system and is available in select countries as a standard, factory configurable feature only. Integrated Bluetooth is also available (factory configurable only) and can be combined with any of the supported wireless LAN and wireless WAN options.

HP un2420 EV-DO/HSPA Mobile Broadband Module	Integrated mobile broadband module with Gobi global mobile Internet technology that provides connectivity to both CDMA (EVDO) and UMTS (HSPA) networks. It also provides GPS functionality for various mapping applications and security applications such as Computrace LoJack Pro Premium for HP ProtectTools. NOTE: Separately purchased mobile network operator service is required. Two 850/900/1575/1800/1900/2100 MHz antennas integrated in the top of the display panel support current and future WWAN technologies.
All 802.11 integrated wireless LAN options	Wi-Fi Certified* Cisco Compatible Extensions support Wired Equivalent Privacy (WEP) support up to 128-bit keys Wi-Fi Protected Access (WPA) and WPA2 support 802.1x authentication support, including EAP-TLS, EAP-TTLS, PEAP-GTC, PEAP-MSCHAPv2, and LEAP Advanced Encryption Standard (AES) support Three antennas integrated in the display enclosure
Intel Centrino Ultimate-N 6300 (3x3)	Integrated support for 802.11a, b, g, and n* 3 transmit, 3 receive antennas Up to 450 mbps data rate

Standard Features

	Intel Centrino Advanced-N 6200 (2x2)	Integrated support for 802.11a, b, g, and n* 2 transmit, 2 receive antennas Up to 300 mbps data rate
	Broadcom 4312G 802.11b/g WiFi Adapter	Integrated support for 802.11 b and g Up to 54 mbps data rate
	Broadcom 43224AGN 802.11a/b/g/n WiFi Adapter	Integrated support for 802.11 a, b, g and n 2 transmit, 2 receive antennas Up to 300 mbps data rate
	HP Integrated Module with Bluetooth Wireless Technology	Bluetooth Specification v2.1 compliant Works with a wide range of Bluetooth devices

* In countries where 802.11n is not allowed, this capability is not enabled (802.11a/b/g only).

Keyboard	The HP spill-resistant keyboard is designed using a thin layer of Mylar film under the keyboard and a drain system that funnels fluid through a hole in the bottom of the notebook. This minimizes the risk of damage to sensitive components underneath. The 101/102-key compatible keyboard features an industry standard, full-pitch key layout with desktop keyboard features, such as the isolated inverted-T cursor control keys, editing keys, both left and right control and alt keys, and 12 function keys. U.S. and International key layouts are available. Includes an integrated numeric keypad, hotkeys for instant access to power conservation, brightness, and other features. It has 19.05 x 19.05 mm key pitch (center-to-center spacing) and 2.5 mm stroke.	
Touch-sensitive controls	Touch-sensitive controls provide easy access to the following features: HP QuickLook 3, HP QuickWeb, wireless on/off, volume mute, volume down, volume up, touchpad on/off	
Dual Pointing devices	Touchpad with scroll zone, two pick buttons Pointstick with two additional pointstick buttons	
Expansion card slots	ExpressCard/54 slot	Supports ExpressCard/54
	Integrated Smart Card Reader	Compatible with ISO 7816 compliant Smart Cards PC/SC interface support
	Secure Digital slot	Supports SD (Secure Digital), MMC (MultiMedia Card)

Standard Features

Internal Storage	Hard Drives	160/250/320/500 GB 7200 rpm SMART SATA II 320 GB 7200 rpm SMART SATA II Self Encrypting Drive
	NOTE: These hard drives are customer removable and will withstand multiple insertion/removal cycles. Up to 10 GB is reserved for the system recovery software.	
	HP 3D DriveGuard (Windows only)	The hard drive is mounted directly to the notebook frame, reducing the transmission of shock to the hard drive. Uses three-axis digital motion detection with intelligent sensitivity to help protect the hard drive during normal use from shock and vibration. The digital accelerometer temporarily halts all data transfer and parks the hard drive when abrupt motion is detected.
	Solid State Drives	160 GB Solid State Drive 256 GB Solid State Drive
Upgrade Bay	Fixed 12.7 mm SATA optical drive	Blu-ray R/RE DVD+/-RW SuperMulti DL Drive Blu-ray ROM DVD+/-RW SuperMulti DL LightScribe Drive DVD+/-RW SuperMulti DL LightScribe Drive DVD-ROM Drive
	Second hard drive	500 GB 7200 rpm SMART SATA II Hard Drive
	Weight saver	
Interfaces	ExpressCard/54 slot	One
	External monitor	Two - (1) DisplayPort, (1) VGA
	Smart Card Reader	One
	1394a	One
	Stereo microphone in	One
	Stereo headphone/line out	One
	Power connector	One
	RJ-11/modem	One
	RJ-45/Ethernet	One
	USB 2.0	Three
	eSATA/USB 2.0 Combo port	One
	Docking connector	One
	Secondary battery connector	One

Standard Features

Audio/Visual

HD audio (HP Premier Sound)
Integrated stereo speakers
Integrated dual-microphone array
Touch-sensitive controls for volume up, volume down, and mute
Stereo headphone/line out
Stereo microphone/line in

Optional 2 MP webcam

- Supports videoconferencing and still image capture
- Large image sensor for excellent colour matching and good low light sensitivity
- Up to 30 frames/sec
- AutoMacro focus lens
- Video capture at VGA, 1.3 Mpixel, and 2 Mpixel resolutions
- 16-bit true colour (camera sensors output YCrCb format among others)

Software

Preinstalled software with Windows operating system

HP Recovery Manager (available with Windows 7 or Vista only)
HP Support Assistant (available with Windows 7 or Vista only)
HP ProtectTools Security Manager
HP QuickLaunch Buttons Software
HP QuickLook 3
HP QuickWeb
HP Power Assistant
HP Connection Manager
HP Wireless Assistant
Microsoft Office 2010 preloaded (purchase of a Product Key required to activate a full Office 2010 suite)*
McAfee Total Protection**
PDF Complete SE***
Roxio Creator Business 10 (select models)
InterVideo WinDVD (select models)
Synaptics Touchpad Driver
HP Webcam Software
WinZip 14.5

Additional software available from the web

HP SoftPaq Download Manager
HP Client Manager Software
HP Client Management Solutions
Java Card Security for HP ProtectTools

* Microsoft Office 2010 Preloaded includes reduced functionality versions of Word and Excel. Purchase of Product Key required to activate full Office 2010 suite available at participating resellers/retailers and http://www.office.com.
** 60 day trial period for McAfee Total Protection for Small Business software. Internet access required to receive updates. First update included. Subscription required for updates thereafter.
*** 60 day trial; purchase license afterwards for full functionality.

Standard Features

HP Recovery Manager	Models shipped with Windows 7 or Windows Vista include HP Recovery Manager. HP Recovery Manager enables fast recovery of the factory preinstalled image if the system becomes corrupted or if important system files are accidentally deleted. Up to 15 GB of the hard drive is reserved for the system recovery software.

Security

Standard Features

HP ProtectTools Security Manager
Enhanced Pre-Boot Security
HP SpareKey
One-Step Logon
Setup Password
DriveLock Password
TPM 1.2 Embedded Security Chip*
TPM Enhanced DriveLock*
HP Disk Sanitizer
Kensington Lock slot
Support for Computrace** LoJack Pro for HP ProtectTools

Optional Features

HP Fingerprint Sensor	Enhanced sensor scans the fingerprint to uniquely identify and authenticate a person.
HP Privacy Filter	Narrows viewing area so that screen data is visible only to persons directly in front of the monitor.
Computrace** LoJack Pro Premium for HP ProtectTools with GPS Tracking	Subscription based security solution providing the ability to track, initiate physical recovery, conduct asset management, and perform remote data delete by utilizing GPS technology. GPS functionality requires HP un2420 EV-DO/HSPA Mobile Broadband Module.

* TPM module disabled where use is restricted by law; for example, Russia and China.
** The Computrace agent is shipped turned off, and must be activated by customers when they purchase a subscription with terms ranging from one to five years.
For more information on HP security solutions refer to: http://www.hp.com/go/security.

HP ProtectTools Security Manager

HP ProtectTools Security Manager is the security platform for business notebooks and desktops. The HP ProtectTools Security Manager is an extensible client security console that delivers enhanced security capabilities through add-on software modules. The following modules are available on the hard drive (also downloadable from the web) and can be configured in Software Setup:

- Credential Manager for HP ProtectTools
- Device Access Manager for HP ProtectTools
- Drive Encryption for HP ProtectTools
- File Sanitizer for HP ProtectTools
- Privacy Manager for HP ProtectTools (Chat & Sign)
- Embedded Security for HP ProtectTools
- Java Card Security for HP ProtectTools
- Computrace LoJack Pro for HP ProtectTools

Standard Features

Power Supply

Models with discrete graphics:
External 90-watt Smart AC adapter
Models with integrated graphics:
External 65-watt Smart AC adapter

Power cord included is 6-foot (1.8 metre).
Total length including external AC adapter is 12 feet (3.66 metre).
HP Fast Charge*

*HP Fast Charge recharges your battery up to 90% within 90 minutes when the system is off. HP Fast Charge does not apply to the HP 9-cell Primary Battery, the HP Ultra-Capacity Battery, or the HP Long Life Battery.

Battery

Primary battery	HP 9-cell 100 WHr Li-Ion Primary Battery HP 6-cell 55 WHr Li-Ion Primary Battery HP Long Life 6-cell 51 WHr Li-Ion Primary Battery
Optional HP Long Life Battery*	HP Long Life Battery (3-cell 47 WHr)
Optional secondary battery	HP Extended Life Battery (8-cell 52 WHr) HP Ultra-Capacity Battery (12-cell 95 WHr)

* The optional HP Long Life Battery takes the place of the primary battery, which must be removed.

Battery Life

	9-cell (100 WHr) Primary	6-cell (55 WHr) Primary	HP Long Life 6-cell (51 WHr) Primary
Primary battery, hard drive	Up to 11 hours and 45 minutes	Up to 6 hours and 30 minutes	Up to 6 hours
Primary battery and optional HP Extended Life Battery, hard drive	Up to 18 hours and 30 minutes	Up to 12 hours and 15 minutes	*
Primary battery and optional HP Ultra-Capacity Battery, hard drive	Up to 23 hours	Up to 18 hours	*
Primary battery, optional HP Ultra-Capacity Battery, Solid State Drive	Up to 24 hours**	Up to 20 hours	*

NOTE: Battery life will vary depending on the product model, configuration, loaded applications, features, use, wireless functionality and power management settings. The maximum capacity of the battery will naturally decrease with time and usage. See MobileMark07 battery benchmark www.bapco.com/products/mobilemark2007 for additional details.

* This configuration not tested for battery life.
** Up to 24 hours requires HP EliteBook 8440p configured with Intel Graphics Media Accelerator HD, optional SSD, 9-cell primary battery and separately purchased Ultra Capacity Battery.

System Standby Time Up to 1 week

Standard Features

Power Conservation	Supports enhanced Intel SpeedStep technology (allows Battery Optimized Mode, Maximum Performance Mode, or Automatic mode) Intel Display Power Saving technology (models with integrated graphics) NVIDIA PowerMizer 7.0 technology (models with NVIDIA graphics) Hibernation Standby ACPI compliance
Docking and Stands	HP Docking Station HP Advanced Docking Station HP USB 2.0 Docking Station HP Essential USB 2.0 Port Replicator HP Dual-Monitor Stand HP Monitor Stand HP Basic Adjustable Stand HP Adjustable Notebook Stand NOTE: Some HP Docking stations may not support every feature of some HP Notebook models. Please refer to the individual docking station documentation for specific information about supported features.
Service and Support	HP Services offers limited 3-year, 1-year and 90-day warranty options depending on country; 1-year limited warranty on primary battery. On-site service and warranty upgrades are also available. HP Care Pack Services extend service contracts beyond the standard warranties. To choose the right level of service for your HP product, use the HP Care Pack Services Lookup Tool at: http://www.hp.com/go/lookuptool. Additional HP Care Pack Services information by product is available at: http://www.hp.com/hps/carepack. NOTE: Certain restrictions and exclusions apply. Consult the HP Customer Support Center for details. http://h20000.www2.hp.com/bizsupport/TechSupport/ProductRoot.jsp.

Options

NOTE: Options/capabilities listed in the QuickSpecs represent those capabilities available through Base Units or Build to Order configurations. The various product features and capabilities will vary in terms of configurable vs. aftermarket options (AMOs). There may be options and capabilities available through CTO that are not available as AMOs.

Memory	HP 1 GB (DDR3 1333 MHz) SODIMM	AT911AA
	HP 2 GB (DDR3 1333 MHz) SODIMM	AT912AA
	HP 4 GB (DDR3 1333 MHz) SODIMM	AT913AA
Storage	HP Notebooks USB Diskette Drive	DC361B
	HP Upgrade Bay SATA DVD+/-RW SuperMulti DL LightScribe Drive	AK869AA
	HP 250GB Pocket Media Drive	FE477AA
	HP External USB Drive CD/DVD R/RW	FS943AA
	HP Upgrade Bay SATA 500 GB 7200 rpm Hard Drive	AU097AA
	HP Primary SATA 500 GB 7200 rpm Hard Drive	AU098AA
	HP Primary SATA 320 GB 7200 rpm Hard Drive	AS282AA
	HP Primary SATA 250 GB 5400 rpm Hard Drive	AK868AA
Expansion Solutions	HP 90W Docking Station	VB041AA#ABA
	HP 90W Docking Station – Smart Buy	VB041UT#ABA
	HP 230W Docking Station	VB043AA#ABA
	HP 120W Advanced Docking Station	NZ222AA#ABA
	HP 120W Advanced Docking Station – Smart Buy	NZ222UT#ABA
	HP 230W Advanced Docking Station	NZ223AA#ABA
	HP USB 2.0 Docking Station	FQ834AA
	HP Essential USB 2.0 Port Replicator	AQ731AA
	HP Dual-Monitor Stand	AK084AA
	HP 2009 Monitor Stand	TBD
	HP 2009 Adjustable Notebook Stand	TBD
	HP Basic Adjustable Stand	AL549AA
Communications	Intel WLAN 802.11a/b/g/n Mini-card Option Kit	TBD
	HP un2420 EVDO/HSPA Mobile Broadband Module	WD301AA

Options

Power	HP 1-Bay Battery Charging Station	RW635AA
	HP 5-Bay Battery Charging Station	RW636AA
	HP Battery Adapter Kit	KV829AA
	HP Smart 65W Travel AC Adapter	AU155AA
	HP 90W Smart AC Adapter	ED495AA
	HP 90W Smart Combo Adapter	AJ652AA
	HP 6-Cell Li-Ion Primary Battery	KU531AA
	HP 9-Cell Li-Ion Primary Battery	AT908AA
	HP Extended Life Battery	AJ359AA
	HP Ultra-Capacity Battery	AT486AA
	HP Long Life Battery	AU213AA
Carrying Cases	HP Basic Carrying Case	AJ078AA
	HP Value Nylon Case	RR314AA
	HP Universal Nylon Case	RR315AA
	HP Executive Leather Case	RR316AA
	HP Deluxe Nylon Backpack	RR317AA
	HP Deluxe Roller Case	GD405AA
	HP Basic Backpack	AM863AA
	HP Basic Messenger Carrying Case	AP355AA
	HP Professional Series Carrying Case	AT886AA
	HP Professional Series Backpack	AT887AA
	HP Professional Series Messenger	AT888AA
	HP Professional Series Lady's Case	AT889AA
	HP Professional Series Slip Case	AT890AA
	HP Elite Series Lady's Case	AT891AA
	HP Merlot Slip Case	AU095AA
Security	HP/Kensington MicroSaver Security Lock	PC766A
	HP 14.0-inch Display Privacy Filter	AU100AA
	HP ExpressCard Smart Card Reader	AJ451AA
Input/Output Devices	HP PS/2 Keyboard & Mouse Bundle	RC464AA
	HP USB Keyboard & Mouse Bundle	RC465AA
	HP USB Optical Travel Mouse	RH304AA
	HP USB/PS2 Optical 2-Button Scroll Mouse	DC369A
	HP Wireless Mouse	AR085AA
	HP BT Headset	AR084AA
	HP Mobile Audio Speakers	FS944AA

Memory

DDR3 PC3-10600 SDRAM (1333 MHz)*
Two SODIMM slots supporting dual-channel memory
SODIMM sizes supported: 1024 MB, 2048 MB, and 4096 MB

Standard Memory

- 1024 MB (1024 MB x 1)
- 2048 MB (2048 MB x 1 or 1024 MB x 2)
- 3072 MB (2048 MB + 1024 MB)
- 4096 MB (4096 MB x 1 or 2048 MB x 2)

Optional Memory Upgrades

Support for up to 8192 MB of memory with the installation of optional DDR3 SDRAM memory kits. Both memory slots are user-accessible. Please refer to the Hardware and Software Guide for installation procedures. Maximized dual-channel performance requires SODIMMs of the same size and speed in both memory slots.

Up to	Slot 1	Slot 2
1024 MB	1024 MB	Empty
2048 MB	2048 MB	Empty
2048 MB	1024 MB	1024 MB
3072 MB	2048 MB	1024 MB
4096 MB	4096 MB	Empty
4096 MB	2048 MB	2048 MB
8192 MB	4096 MB	4096 MB

* With some processors, memory bus runs at a maximum of 1066 MHz.

NOTE: This chart does not represent all possible memory configurations. Due to the non-industry standard nature of some third-party memory modules, we strongly recommend using only HP-branded memory modules to ensure compatibility. If you mix memory speeds, the system will perform at the lower memory speed. Full availability of 4 GB or more of memory requires a Windows 64-bit operating system or Linux. With Windows 32-bit operating systems, the amount of usable memory is dependent upon your configuration, so that above 3 GB all memory may not be available due to system resource requirements.

Memory Upgrades

HP 1 GB (DDR3 1333 MHz) SODIMM	AT911AA
HP 2 GB (DDR3 1333 MHz) SODIMM	AT912AA
HP 4 GB (DDR3 1333 MHz) SODIMM	AT913AA

Upgrade Bay Drive Support

	Quantity Supported	Drive Bay
Blu-ray R/RE DVD+/-RW SuperMulti DL Drive	One	Upgrade Bay
Blu-ray ROM DVD+/-RW SuperMulti DL LightScribe Drive	One	Upgrade Bay
DVD+/-RW SuperMulti DL LightScribe Drive	One	Upgrade Bay
DVD-ROM Drive	One	Upgrade Bay
500 GB 7200 rpm SMART SATA II Hard Drive	One	Upgrade Bay
Weight Saver	One	Upgrade Bay

Internal Storage Device

	Quantity Supported	Drive Bay
Hard Drives		
500 GB 7200 rpm SMART SATA II Hard Drive	One	Dedicated hard drive bay
320 GB 7200 rpm SMART SATA II Hard Drive	One	Dedicated hard drive bay
320 GB 7200 rpm SMART SATA II Self Encrypting Drive	One	Dedicated hard drive bay
250 GB 7200 rpm SMART SATA II Hard Drive	One	Dedicated hard drive bay
160 GB 7200 rpm SMART SATA II Hard Drive	One	Dedicated hard drive bay
Solid State Drive		
256 GB Solid State Drive	One	Dedicated hard drive bay
160 GB Solid State Drive	One	Dedicated hard drive bay

System Unit	**Dimensions** (HxWxD)		1.23 in (at front) x 13.21 in x 9.3 in 31.3 mm (at front) x 335.6 mm x 236.2 mm
	Weight		Starting at 4.7 lb (2.12 kg) with weight saver (no optical drive) Starting at 5.0 lb (2.27 kg) with DVD-ROM drive
	NOTE: Height varies depending upon where on the notebook the measurement is made. Weight varies by configuration and components. Weight includes 6-cell battery, hard drive, and WLAN.		
	Stand-Alone Power Requirements (AC Power)	Nominal Operating Voltage	18.5 V
		Average Operating Power	Discrete graphics: 22.5 W Integrated graphics: 14.5 W
		Max Operating Power	Discrete graphics: < 90 W Integrated graphics: < 65 W
	Temperature	Operating	32° to 95° F (0° to 35° C) (not writing optical) 41° to 95° F (5° to 35° C) (writing optical)
		Non-operating	–4° to 140° F (–20° to 60° C)
	Relative Humidity	Operating	10% to 90%, non-condensing
		Non-operating	5% to 95%, 101.6° F (38.7° C) maximum wet bulb temperature
	Shock	Operating	125 G, 2 ms, half-sine
		Non-operating	200 G, 2 ms, half-sine
	Random Vibration	Operating	0.75 grms
		Non-operating	1.50 grms
	Altitude (unpressurized)	Operating	–50 to 10,000 ft (–15.24 to 3,048 m)
		Non-operating	–50 to 40,000 ft (–15.24 to 12,192 m)
	Industry Standard Certifications	UL	Yes
		CSA	Yes
		FCC Compliance	Yes
		ENERGY STAR®	Select models*
		EPEAT	Registered TBD in United States**
		ICES	Yes
		GS	Yes
		Australia / NZ A-Tick Compliance	Yes
		CCC	Yes
		Japan VCCI Compliance	Yes
		KCC	Yes
		BSMI	Yes
		CE Marking Compliance	Yes
		BNCI or BELUS	Yes
		CIT	Yes
		GOST	Yes

	Saudi Arabian Compliance (ICCP)	Yes
	SABS	Yes
	UKRSERTCOMPUTER	Yes

* Configurations of the HP EliteBook 8440p that are ENERGY STAR qualified are identified as HP EliteBook 8440p ENERGY STAR on HP websites and on www.energystar.gov.

** EPEAT TBD Registered in U.S. EPEAT registration varies by country. See www.epeat.net for registration status by country.

NOTE: For accessibility information on HP products, please visit: http://www.hp.com/accessibility.

HP 120W Smart AC Adapter	Weight	1.52 lb (0.69 kg) (adapter) 0.29 lb (0.13 kg) (power cord)	
	Dimensions	6.65 x 2.56 x 1.50 in (16.9 x 6.5 x 3.8 cm)	
	Input	Operating Input Voltage	100 to 240 VAC
		Operating Input Current	PFC Version: 2.20 A at 90 VAC 1.10 A at 180 VAC Non-PFC Version: 2.5 A at 110 VAC 1.25 A at 180 VAC
		Operating Frequency Range	47 to 63 Hz AC
		Efficiency	83% minimum at 115 VAC
	Output	Output power	120 W
		DC Output Voltage	18.5 V
	Environmental Design	Operating Temperature	32° to 104° F (0° to 35° C)
		Non-operating (storage) Temperature	-4° to 149° F (-20° to 65° C)
		Altitude	0 to 10,000 ft (0 to 3,048 m)
		Humidity	20% to 80%
		Storage Humidity	10% to 90%
	EMI and Safety Certifications	CE Mark: full compliance with LVD and EMC directives Worldwide safety standards: IEC60950, EN60950, UL60950, Class2, SELV Agency approvals: C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE, S-Mark, Australian Electric Permit, PSB, eK, BSMI, BNCI, KONCAR, GS, GOST, SASO, SABS, UKRSERTCOMPUTER; MTBF- over 200,000 hours at 25°C ambient condition.	

Technical Specifications

HP 90W Smart AC Adapter	Dimensions	5.00 x 1.97 x 1.1 in (12.7 x 5.0 x 2.9 cm)	
	Weight	0.82 lb (370 g)	
	Input	100 to 240 VAC	
		Input Efficiency	83% min at 115 VAC
		Input frequency range	47 to 63 Hz
		Input AC current	1.5 A at 90 VAC, 0.75 A at 180 VAC PFC Version
			2.4 A at 90 VAC, 1.2 A at 180 VAC NON PFC Version
	Output	Output power	90W
		DC output	19.0V
		Hold-up time	5 msec at 115 VAC input
		Output current limit	<11A, Over voltage protection- 29V max automatic shutdown
	Connector	3 pin/grounded, mates with interchangeable cords	
	Environmental Design	Operating temperature	32° to 104° F (0° to 40° C)
		Non-operating (storage) temperature	–4° to 149° F (–20° to 65° C)
		Altitude	0 to 10,000 ft (0 to 3,048 m)
		Humidity	20% to 80%
		Storage Humidity	10% to 90%
	EMI and Safety Certifications	CE Mark – full compliance with LVD and EMC directives; Worldwide safety standards – IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals – C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE; MTBF– over 200,000 hours at 25°C ambient condition.	

NOTE: Unless otherwise noted, temperature limits listed in the following component specifications relate to the internal temperatures of these components and not to the environment in which the PC is operating.

Optional HP Ultra-Capacity Battery	Dimensions (H x W x L)	1.3 x 6.0 x 10.6 in (3.33 x 15.25 x 26.88 cm)	
	Weight	1.77 lb (0.803 kg)	
	Cells/Type	12-cell Lithium-Ion	
	Energy	Watt-hour Capacity	95 Wh
	Temperature	Operating (Charging)	32° to 113° F (0° to 45° C)
		Operating (Discharging)	14° to 140° F (-10° to 60° C)
		Non-operating	-4° to 140° F (-20° to 60° C)
	Battery Re-Charge Time	Smart Adapter	3 to 4 hours
		System ON	4 to 5 hours (depending on system power consumption)
	Fuel Gauge	When pressed, LEDs light indicating level of charge remaining on battery	

Technical Specifications

Optional HP Extended Life Battery	Dimensions (H x W x L)	1.0 x 3.9 x 8.7 in (2.5 x 10.0 x 22.0 cm)	
	Weight	1.00 lb (0.455 kg)	
	Cells/Type	8-cell Lithium-Ion	
	Energy	Watt-hour Capacity	52 Wh
	Temperature	Operating (Charging)	32° to 113° F (0° to 45° C)
		Operating (Discharging)	14° to 140° F (-10° to 60° C)
		Non-operating	-4° to 140° F (-20° to 60° C)
	Battery Re-Charge Time	System in OFF mode or Standby	3 hours
		System ON	3 to 5 hours (depending on system power consumption)
		HP Fast Charge Technology	Charges the battery up to 90% within 90 minutes when system is OFF
	Fuel Gauge	When pressed, LEDs light indicating level of charge remaining on battery	
Optional HP Long Life Battery	Dimensions (H x W x L)	0.8 x 2.1 x 8.0 in (2.0 x 5.3 x 20.4 cm)	
	Weight	0.71 lb (0.32 kg)	
	Cells/Type	3-cell Lithium-Ion	
	Energy	Watt-hour Capacity	47 Wh
	Temperature	Operating (Charging)	32° to 113° F (0° to 45° C)
		Operating (Discharging)	14° to 140° F (-10° to 60° C)
		Non-operating	-4° to 140° F (-20° to 60° C)
	Battery Re-Charge Time	System in OFF mode or Standby	2.5 hours
		System ON	3 to 5 hours (depending on system power consumption)
		HP Fast Charge Technology	Charges the battery up to 90% within 90 minutes when system is OFF
HP 9-Cell 100 Wh Lithium-Ion Primary battery	Dimensions (H x W x L)	0.75 x 3.0 x 8.0 in (2.0 x 7.5 x 20.5 cm)	
	Weight	1.1 lb (0.480 kg)	
	Cells/Type	9-cell Lithium-Ion	
	Energy	Watt-hour Capacity	100 Wh
	Temperature	Operating (Charging)	32° to 113° F (0° to 45° C)
		Operating (Discharging)	14° to 122° F (-10° to 50° C)
		Non-operating	-4° to 122° F (-20° to 50° C)
	Battery Re-Charge Time	System in OFF mode or Standby	3.5 to 5 hours
		System ON	4 to 7 hours (depending on system power consumption)

Technical Specifications

6-Cell (55 Wh) Lithium-on battery	Dimensions (HxWxL)	0.8 x 2.1 x 8.0 in (2.0 x 5.3 x 20.4 cm)	
	Weight	0.71 lb (0.32 kg)	
	Cells/Type	6-cell Lithium-Ion	
	Energy	Watt-hour Capacity	55 Wh
	Temperature	Operating (Charging)	32° to 113° F (0° to 45° C)
		Operating (Discharging)	14° to 140° F (-10° to 60° C)
		Non-operating	-4° to 140° F (-20° to 60° C)
	Battery Re-Charge Time	System in OFF Mode or Standby	2.5 hours
		System ON	3 to 5 hours (depending on system power consumption)
		HP Fast Charge Technology	Charges the battery up to 90% within 90 minutes when system is OFF
HP Long Life 6-cell 51 Wh Lithium-Ion Primary battery	Dimensions (H x W x L)	0.8 x 2.1 x 8.0 in (2.0 x 5.3 x 20.3 cm)	
	Weight	0.73 lb (0.331 kg)	
	Cells/Type	6-cell Lithium-Ion	
	Energy	Watt-hour Capacity	51 Wh
	Temperature	Operating (Charging)	32° to 113° F (0° to 45° C)
		Operating (Discharging)	14° to 140° F (-10° to 60° C)
		Non-operating	-4° to 140° F (-20° to 60° C)
	Battery Re-Charge Time	System in OFF Mode or Standby	2.5 hours
		System ON	3 to 5 hours (depending on system power consumption)

Displays

Technical Specifications

14.0-inch LED HD (1366 x 768) anti-glare	Active Area (W x H)	12.74 x 7.56 in (32.4 x 19.2 cm)	
	Diagonal Size	14.0 in (35.6cm)	
	Surface Treatment	Anti-glare	
	Contrast Ratio	300:1 (typical)	
	Refresh Rate	60 Hz	
	Brightness	200 nit (typical)	
	Pixel Resolution	Pitch	0.227 mm
		Format	1366 x 768
		Configuration	RGB Stripe
	Backlight	LED	
	PPI	112 ppi	
	Viewing Angle	±30° Horizontal, ±10° Vertical (minimum) 30/30/20/10 (Left/Right/Down/Up) (minimum) or 45/45/35/25 (Left/Right/Down/Up) (typical)	

14.0-inch LED HD+ (1600 x 900) anti-glare	Dimensions (W x H)	323.5 mm x 192.0 mm (typ)	
	Diagonal Size	14.0 in (35.6cm)	
	Surface Treatment	Anti-glare	
	Contrast Ratio	300 (min)	
	Refresh Rate	60 Hz	
	Brightness	200 nits (typ)	
	Pixel Resolution	Pitch	0.1935mm
		Format	1600 x 900
		Configuration	RGB Strip
	Backlight	LED	
	PPI	131 ppi	
	Viewing Angle	30/30/20/10 (Left/Right/Down/Up) (minimum)	

Internal Storage

Technical Specifications

500 GB 7200 rpm SATA Hard Drive	Drive Weight	0.25 lbs (115g)	
	Capacity	500 GB	
	Height	0.37 in (9.5 mm)	
	Width	2.75 in (70 mm)	
	Interface	ATA-8, SATA 2.6, 3.0 Gb/s, NCQ	
	Transfer Rate	Synchronous (maximum)	100 MB/s (Drive Capability)
	Seek Time (typical reads, including settling)	Single Track	1.5 ms
		Average	11 ms
		Maximum	22 ms
	Rotational Speed	7200 rpm	
	Logical Blocks	976,773,168	
	Operating Temperature	32° to 140° F (0° to 60° C) [case temp]	
	Features	ATA Security	

320 GB 7200 rpm SATA Hard Drive	Drive Weight	0.25 lbs (115g)	
	Capacity	320 GB	
	Height	0.37 in (9.5 mm) or on some models 0.28 in (7 mm)	
	Width	2.75 in (70 mm)	
	Interface	ATA-8, SATA 2.6, 3.0 Gb/s, NCQ	
	Transfer Rate	Synchronous (maximum)	100 MB/s (Drive Capability)
	Seek Time (typical reads, including settling)	Single Track	1.5 ms
		Average	11 ms
		Maximum	22 ms
	Rotational Speed	7200 rpm	
	Logical Blocks	625,142,448	
	Operating Temperature	32° to 140° F (0° to 60° C) [case temp]	
	Features	ATA Security	

Technical Specifications

250 GB 7200 rpm SATA Hard Drive	Drive Weight	0.25 lbs (115g)	
	Capacity	250 GB	
	Height	0.37 in (9.5 mm) or on some models 0.28 in (7 mm)	
	Width	2.75 in (70 mm)	
	Interface	ATA-8, SATA 2.6, 3.0 Gb/s, NCQ	
	Transfer Rate	Synchronous (maximum)	100 MB/s (Drive Capability)
	Seek Time (typical reads, including settling)	Single Track	1.5 ms
		Average	11 ms
		Maximum	22 ms
	Rotational Speed	7200 rpm	
	Logical Blocks	488,397,168	
	Operating Temperature	32° to 140° F (0° to 60° C) [case temp]	
	Features	ATA Security	

256 GB 2.5-Inch SATA Solid State Drive	Weight	80.1 Grams	
	Capacity	256 GB	
	Height	0.37 in (9.5 mm)	
	Width	2.75 in (70 mm)	
	Interface	SATA	
	Performance	Maximum Sequential Read	Maximum Sequential Write
		220 MB/s	200 MB/s
	Logical Blocks	500,118,192	
	Operating Temperature	32° to 158°F (0° to 70°C) [case temp]	
	Features	ATA Security; ATA-7;SATA 2.6; DIPM	

160 GB 2.5-inch SATA Solid State Drive	Weight	78 Grams	
	Capacity	160 GB	
	Height	0.275 in (7 mm)	
	Width	2.75 in (70 mm)	
	Interface	SATA	
	Performance	Maximum Sequential Read	Maximum Sequential Write
		250 MB/s	70 MB/s
	Logical Blocks	312,581,808	
	Operating Temperature	32° to 158°F (0° to 70°C) [case temp]	
	Features	ATA Security; ATA-7 ;SATA 2.6; DIPM	

Optical Drives

DVD-ROM Drive	Access Times	Random	< 110 ms CD (typical)
			< 110 ms DVD (typical)
	Max Data Transfer Rate	24X CD-ROM	Up to 3,600 KB/s
		8X-DVD	Up to 10,800 KB/s
	Transfer Mode	UDMA Mode 5	
	Interface	Gen 1 SATA	
	Supported Media (read)	CD-DA, CD+(E)G, CD-MIDI, CD-TEXT, CD-ROM, CD-ROM XA, MIXED MODE CD, CD-I, CD-I Bridge (Photo-CD, Video CD), Multisession CD (Photo-CD, CD-EXTRA, Portfolio, CD-R, CD-RW), CD-R, CD-RW, DVD-ROM (DVD-5, DVD-9, DVD-10, DVD-18), DVD-R, DVD-RW, DVD+R, DVD+RW, DVD-RAM	
	Supported Media (write)	None	
	Max Media Capacity (read)	8.5 GB	
	Transport	Tray Loading	

DVD+/-RW SuperMulti DL LightScribe Drive	Access Times	Random	< 150ms CD (typical)
			< 160 ms DVD (typical)
	Max Data Transfer Rate	24X CD-ROM	Up to 3,600 KB/s
		8X DVD	Up to 10,800 KB/s
		24X CD-R	Up to 3,600 KB/s
		16X CD-RW	Up to 2,400 KB/s
		8X DVD+R	Up to 10,800 KB/s
		8X DVD+RW	Up to 10,800 KB/s
		8X DVD-R	Up to 10,800 KB/s
		6X DVD-RW	Up to 8100KB/s
		4X - DVD+R Dual Layer	Up to 5,400 KB/s
		4X - DVD-R Dual Layer	Up to 5,400 KB/s
		5X DVD-RAM	Up to 6,750 KB/s
	Transfer Mode	UDMA Mode 5	
	Interface	Gen 1 SATA	
	Supported Media (read)	CD-DA, CD+(E)G, CD-MIDI, CD-TEXT, CD-ROM, CD-ROM XA, MIXED MODE CD, CD-I, CD-I Bridge (Photo-CD, Video CD), Multisession CD (Photo-CD, CD-EXTRA, Portfolio, CD-R, CD-RW), CD-R, CD-RW, DVD-ROM (DVD-5, DVD-9, DVD-10, DVD-18), DVD-R, DVD-RW, DVD+R, DVD+RW, DVD-RAM	
	Supported Media (write)	CD-R, CD-RW, DVD+R, DVD+RW, DVD-R, DVD-RW, DVD-RAM, LightScribe	
	Max Media Capacity (read)	8.5 GB	
	Max Media Capacity (write)	8.5 GB	
	Transport	Tray Loading	

Blu-ray R/RE DVD+/-RW SuperMulti DL Drive	Access Times	Random	<140 ms CD-ROM (typical) <160 ms DVD-ROM (typical) <300 ms BD-ROM (typical)
	Max Data Transfer Rate	24X CD-ROM	Up to 3,600 KB/s
		8X DVD-ROM	Up to 10,800 KB/s
		8X CD-R	Up to 1,200 KB/s
		8X CD-RW	Up to 1,200 KB/s
		8X DVD+R	Up to 10,800 KB/s
		4X DVD+RW	Up to 5,400 KB/s
		8X DVD-R	Up to 10,800 KB/s
		4X DVD-RW	Up to 5,400 KB/s
		2.4X DVD+R(9)	Up to 2,700 KB/s
		5X DVD-RAM	Up to 6,750 KB/s
		1X BD-ROM	Up to 4,500 KB/s
		1X BD-R	Up to 4,500 KB/s
		1X BD-RE	Up to 4,500 KB/s
	Transfer Mode	UDMA Mode 5	
	Interface	Gen 1 SATA	
	Supported Media (read)	CD-DA, CD+(E)G, CD-MIDI, CD-TEXT, CD-ROM, CD-ROM XA, MIXED MODE CD, CD-I, CD-I Bridge (Photo-CD, Video CD), Multisession CD (Photo-CD, CD-EXTRA, Portfolio, CD-R, CD-RW), CD-R, CD-RW, DVD-ROM (DVD-5, DVD-9, DVD-10, DVD-18), DVD-R, DVD-RW, DVD+R, DVD+RW. DVD-RAM, BD-ROM, BD-R, BD-RE	
	Supported Media (write)	CD-R, CD-RW, DVD+R, DVD+R(9), DVD+RW, DVD-R, DVD-R(9), DVD-RW, DVD-RAM, BD-R, BD-RE	
	Max Media Capacity (read)	50.0 GB	
	Max Media Capacity (write)	50.0 GB	
	Transport	Tray Loading	

Blu-ray ROM DVD+/-RW SuperMulti DL LightScribe Drive	Access Times	Random	<190 ms CD-ROM (typical) < 190ms DVD-ROM (typical) <230 ms BD-ROM (typical)
	Max Data Transfer Rate	24X CD-ROM	Up to 3600 KB/s
		8X DVD-ROM	Up to 10800 KB/s
		16X CD-R	Up to 1,200 KB/s
		10X CD-RW	Up to 1500 KB/s
		8X DVD+R	Up to 10800 KB/s
		8X DVD+RW	Up to 10,800 KB/s
		8X DVD-R	Up to 10800 KB/s
		6X DVD-RW	Up to 8,100 KB/s
		4X - DVD+R Dual Layer	
		4X - DVD-R Dual Layer	Up to 5400 KB/s
		5X DVD-RAM	Up to 6750 KB/s
		4X BD-ROM	Up to 18,000 KB/s
	Transfer Mode	UDMA Mode 5	
	Interface	Gen 1 SATA	
	Supported Media (read)	CD-DA, CD+(E)G, CD-MIDI, CD-TEXT, CD-ROM, CD-ROM XA, MIXED MODE CD, CD-I, CD-I Bridge (Photo-CD, Video CD), Multisession CD (Photo-CD, CD-EXTRA, Portfolio, CD-R, CD-RW), CD-R, CD-RW, DVD-ROM (DVD-5, DVD-9, DVD-10, DVD-18), DVD-R, DVD-RW, DVD+R, DVD+RW. DVD-RAM, BD-ROM, BD-R, BD-RE	
	Supported Media (write)	CD-R, CD-RW, DVD+R, DVD+R(9), DVD+RW, DVD-R, DVD-R(9), DVD-RW, DVD-RAM, LightScribe	
	Max Media Capacity (read)	50.0 GB	
	Max Media Capacity (write)	8.5 GB	
	Transport	Tray Loading	

Security

Technical Specifications

HP Fingerprint Sensor (optional)	Mobile Voltage Operation	3.0V-3.6V Single Supply
	Operating Temperature	32° - 158°F (0° - 70°C)
	Current Consumption @ 3.3V	Less than 70 mA peak imaging and scrolling Less than 25 mA hardware finger detection Advanced Power Management
	High-Rate Image Capture	Up to 240 image frames /sec
	ESD Resistance	IEC 61000-4-2 Level 4 (±15KV)
	Detection Matrix	192 x 16 Pixels 9.7 mm x 0.81 mm 500 ppi High-Resolution Images

Audio

Hardware	Implementation	IDT 92HD75B High Definition CODEC
	Touch-Sensitive Volume Controls	Volume up, volume down, and mute
	Full Duplex	Yes
	Microphone In	Stereo
	Headphone/Line Out	Stereo
	Integrated Microphone	Yes, dual-microphone array when equipped with optional webcam
Audio Output Quality	Frequency Response	20 Hz - 20 kHz
	Signal to Noise Ratio	>85 dB
	Total Harmonic Distortion	0.01%
	Noise Floor	-110 dB
	Play/Record Sampling Rate(s)	8 kHz - 48kHz
	DAC	16, 20 or 24-bit
	ADC	16 or 20-bit
Integrated Stereo Speakers	Power Rating	2 Watts
	Impedance	4 Ohms

Communications

Technical Specifications

Integrated Intel Gigabit Network Connection (10/100/1000 NIC) 82577LM	Ethernet Features	10 Mbit/s operation (10BASE-T; IEEE 802.3i; IEEE 802.3 clauses 13-14) 100 Mbit/s operation (100BASE-TX; IEEE 802.3u; IEEE 802.3 clauses 21-30) 1000 Mbit/s operation (1000BASE-T; IEEE 802.3z and 802.3ab; IEEE 802.3 clauses 34-42) Auto-Negotiation (Automatic Speed Selection) Full Duplex Operation at all Speeds, Half Duplex operation at 10 and 100 Mbit/s IEEE 802.1p QoS (Quality of Service) Support IEEE 802.3x Flow Control (IEEE 802.3 clauses 31-32; configurable)
	Power Management	ACPI compliant – multiple power modes Situation-sensitive features reduce power consumption
	Performance Features	TCP/IP/UDP Checksum Offload (configurable)
	Manageability	Wake-on-LAN from standby and hibernation (Magic Packet and Microsoft Wake-Up Frame); Wake-on-LAN from off (Magic Packet only) PXE 2.1 Remote Boot Statistics Gathering (SNMP MIB II, Ethernet-like MIB, Ethernet MIB (802.3x, clause 30)) Comprehensive diagnostic and configuration software suite Intel Advanced Management Technology 6.0 (iAMT)
	Interface	PCI Express x1 based, SMBUS dedicated connection with Intel® 5 Series Chipset
	NIC Device Driver Name	Intel 82577 Gigabit Network Connection
V.92 56K Data/Fax Modem	Form Factor	MDC 1.5 Daughtercard
	Power Management Support	APM Revision 1.2, ACPI
	Approvals/ Certifications	UL, CSA, NEMKO, CCIB, Industry Canada, FCC Part 68, CTR21, FCC Part 15 Class B, Canadian ICES-003 Class B, C.I.S.P.R.22, Australian ACA, CE Mark, Other Countries
	Data Mode Capabilities	V.92 data V.8bis V.80 V44, V.42bis, MNP5 (Compression) V.42 (LAPM, MNP2-4) (Error Correction) Optional symbol rates: 2800, 3429 Asymmetric Symbol rates Synchronous primary channel data signaling rates: 3600, 31200 Automatic rate re-negotiation V.34 V.32bis V.32 V.23 V.22bis V.22

		V.21 Bell 212A Bell 103J
	Fax Mode Capabilities	TIA/EIA-578-B (Class 1) T.30, T.4 (Group 3) V.17 V.29 V.27ter V.21 Channel 2
	Command Set	V.250 (Partial) TIA-602 Identification: +GMI, +GMM, +GMR Port control: +IPR, +ICF, +IFC, +ILRR Modulation: +MS, +MR, +MA Error control: +ES, +ER, +EB, +ESR, +ETBM Data compression: +DS, +DR V.251
HP un2420 EV-DO/HSPA Mobile Broadband Module	Technology/Operating Bands	GSM/GPRS/EDGE: 850MHz(Cell), 900MHz(EGSM), 1800MHz(DCS), 1900MHz (PCS) UMTS/WCDMA with receive diversity: 2100MHz (UTRA FDD Band I), 1900MHz (UTRA FDD Band II), 900Mhz (UTRA FDD Band VIII), 850MHz (UTRA FDD Band V) 1xEVDO/1xRTT with receive diversity: 850MHz (Band Class0-Cell), 1900MHz (Band Class1-PCS)
	Wireless Protocol Standards	GSM/GPRS/EDGE: Class B, Multi-slot operation, coding schemes CS1 - CS4 and MSC1 - MSC9. UMTS/WCDMA: Release 99 and Release 6 CDMA: 1xEVDO Release 0 and Release A, IS-95A, IS-95B, IS-2000
	Wireless Parametric Standards	Meets or exceeds TIA/EIA IS-98-D
	Maximum Data Rates	UMTS (HSPA) - 7.2 Mbps (Download), 2.0Mbps (Upload) CDMA (EVDO Release A) - 3.1 Mbps (Download), 1.8Mbps (Upload)
	GPS	Standalone GPS enabled
	GPS Bands	L1 - 1575.42 MHz
	Maximum Output Power	GSM/GPRS/EDGE: 32dBm (+/-1) WCDMA: 24dBm (+/-1) CDMA: 24dBm (+/-1)
	Maximum Power Consumption	2500mA (peak); 1000mA (average)
	Power Consumption, Sleep Mode	5 mA
	Power Management	USB selective suspend Integrated notebook wireless button
	Antenna Type	Dual high efficiency 5 band antennae with spatial diversity, mounted in the display enclosure
	Form Factor	PCI-Express MiniCard, USB 2.0 interface

	Weight	11.5 g
	Dimensions (Length x Width x Thickness)	2.01 x 1.18 x 0.18 in (51 x 30 x 5 mm)
	Voltage, Operating	3.3v +/- 10%
	Temperature, Operating (from TIA/EIA/IS-98-D)	-22° to 140° F (-30° to 60° C) (full RF performance) -22° to 167° F (-30° to 75° C) (reduced RF performance)
	Temperature, Non-operating, 96 hours (from MIL-STD 202 Method 108)	-40° to 185° F (-40° to 85° C)
	Humidity, Non-operating	85% relative humidity for 48 hours @ 185° F (85° C) (non-condensing)
	Configuration Utilities	HP Connection Manager
	LED Activity	LED Off - Radio Off; Solid LED On - Radio On
Intel Centrino Ultimate-N 6300	**Wireless LAN Standards**	IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n* * In countries where 802.11n is not allowed, this capability is not enabled.
	Interoperability	Wi-Fi certified (802.11bgn only) Cisco Compatible Extensions Program compliant (802.11bgn only) with Microsoft Windows Vista and XP
	Frequency Band	2.4 GHz and 5GHz
	Antenna Structure	3 transmit; 3 receive (3x3)
	Data Rates	802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11b: 1, 2, 5.5, 11 Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11n: many possible data rates, ranging from 6 Mbps to 450 Mbps, depending on the combination of Bandwidth, Modulation Coding Scheme, and Guard Interval used, as defined in IEEE 802.11n specification
	Modulation	Direct Sequence Spread Spectrum DBPSK, DQPSK, CCK, OFDM, BPSK, QPSK, 16-QAM, 64-QAM
	Security[1]	Authentication: WPA and WPA2, 802.1x (EAP_TLS, TTLS, PEAP, LEAP, EAP-FAST) Authentication Protocols: PAP, CHAP, TLS, GTC, MS-CHAP, MS-CHAPv2 Encryption: 64 and 128-bit WEP, AES-CCMP, CKIP, TKIP Support for Cisco Security Features (proven compatibility with Cisco Aironet infrastructure products through the Cisco Compatible Extensions Program Version 4) with Microsoft Windows Vista and XP only.
	Sub-channels	Multinational support with frequency bands and channels compliant to local regulations.
	Media Access Protocol	CSMA/CA (Collision Avoidance) with ACK

Network Architecture	Ad-hoc (Peer to Peer)	
Models	Infrastructure (Access Point Required)	
Roaming	IEEE 802.11 compliant roaming between Access Points	
Output Power (for CCK and OFDM)[2]	17 dBm max	
Power Consumption	Transmit: 2.4 Watts (max, with three spatial streams) Receive: 1.4 Watts (max with three spatial streams) Idle mode[3]: 35 mW (average) Radio off: 20 mW (max)	
Power Management	ACPI compliant power management 802.11 compliant power saving mode	
Receiver Sensitivity[4]	54 Mbps: -76 dBm, 6 Mbps: -92 dBm	
Antenna Connections	3 U.FL type connectors, 50 ohm nominal impedance	
Form Factor	PCI-Express Half-MiniCard	
Weight	0.0075 lb (3.4 g)	
Dimensions	0.12 x 1.06 x 1.18 in (3.1 x 26.8 x 30.0 mm)	
Operating Voltage	3.3V +/- 9%	
Temperature	Operating	32° to 176° F (0° to 80° C)
	Non-operating	-40° to 176° F (-40° to 80° C)
Humidity	Operating	10% to 90% (non-condensing)
	Non-operating	5% to 90% (non-condensing)
Altitude	Operating	0 to 10,000 ft (3,048 m)
	Non-operating	0 to 50,000 ft (15,240 m)
LED Activity	LED Off - Radio OFF; Solid LED On - Radio ON	

1. Check latest software/driver release for updates on supported security features.
2. Maximum output power may vary by country according to local regulations.
3. In Power Save Polling mode and on battery power.
4. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CCK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).
5. WLAN supplier's client utility is required for Cisco Compatible Extensions support with Microsoft Windows XP. WLAN may also be compatible with certain third-party software supplicants. WLAN supplier IHV extensions required for Cisco Compatible Extensions support for Microsoft Windows Vista.

Intel Centrino Advanced-N 6200	Wireless LAN Standards	IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n* * In countries where 802.11n is not allowed, this capability is not enabled.
	Interoperability	Wi-Fi certified Cisco Compatible Extensions Program compliant with Microsoft Windows Vista and XP
	Frequency Band	2.4 GHz and 5GHz
	Antenna Structure	2 transmit; 2 receive (2x2)

Data Rates	802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11b: 1, 2, 5.5, 11 Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11n: 66 possible data rates, ranging from 6 Mbps to 300 Mbps, depending on the combination of Bandwidth, Modulation Coding Scheme, and Guard Interval used, as defined in IEEE 802.11n specification	
Modulation	Direct Sequence Spread Spectrum DBPSK, DQPSK, CCK, OFDM, BPSK, QPSK, 16-QAM, 64-QAM	
Security[1]	Authentication: WPA and WPA2, 802.1x (EAP_TLS, TTLS, PEAP, LEAP, EAP-FAST) Authentication Protocols: PAP, CHAP, TLS, GTC, MS-CHAP, MS-CHAPv2 Encryption: 64 and 128-bit WEP, AES-CCMP, CKIP, TKIP Support for Cisco Security Features (proven compatibility with Cisco Aironet infrastructure products through the Cisco Compatible Extensions Program Version 4) with Microsoft Windows Vista and XP only.	
Sub-channels	Multinational support with frequency bands and channels compliant to local regulations.	
Media Access Protocol	CSMA/CA (Collision Avoidance) with ACK	
Network Architecture Models	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)	
Roaming	IEEE 802.11 compliant roaming between 2.4GHz band Access Points	
Output Power (for CCK and OFDM)[2]	17 dBm max	
Power Consumption	Transmit: 2.3 Watts (max, with two spatial streams) Receive: 1 Watt (max with two spatial streams) Idle mode[3]: 35 mW (average) Radio off: 20 mW (max)	
Power Management	ACPI compliant power management 802.11 compliant power saving mode	
Receiver Sensitivity[4]	54 Mbps: -76 dBm, 6 Mbps: -92 dBm	
Antenna Connections	2 U.FL type connectors, 50 ohm nominal impedance	
Form Factor	PCI-Express Half-MiniCard	
Weight	0.0075 lb (3.4 g)	
Dimensions	0.12 x 1.06 x 1.18 in (3.1 x 26.8 x 30.0 mm)	
Operating Voltage	3.3V +/- 9%	
Temperature	Operating Non-operating	32° to 176° F (0° to 80° C) -40° to 176° F (-40° to 80° C)
Humidity	Operating Non-operating	10% to 90% (non-condensing) 5% to 90% (non-condensing)
Altitude	Operating Non-operating	0 to 10,000 ft (3,048 m) 0 to 50,000 ft (15,240 m)
Configuration Utility[5]	Choice of Configuration Utility: Microsoft Windows XP	

- Microsoft Windows XP Wireless Network Connection Manager
- Intel PROSet for Microsoft Windows XP (required for Cisco Compatible Extensions support)

Microsoft Windows Vista

- Microsoft Windows Vista Wireless Network Connection Manager.
- Intel IHV extensions for Windows Vista available to support Cisco Compatible Extensions.

LED Activity	LED Off - Radio OFF; Solid LED On - Radio ON

1. Check latest software/driver release for updates on supported security features.
2. Maximum output power may vary by country according to local regulations.
3. In Power Save Polling mode and on battery power.
4. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CCK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).
5. WLAN supplier's client utility is required for Cisco Compatible Extensions support with Microsoft Windows XP. WLAN may also be compatible with certain third-party software supplicants. WLAN supplier IHV extensions required for Cisco Compatible Extensions support for Microsoft Windows Vista.

Broadcom 4312G 802.11b/g WiFi Adapter	Wireless LAN Standards	IEEE 802.11b IEEE 802.11g
	Interoperability	Wi-Fi certified Cisco Compatible Extensions Program compliantwith Microsoft Windows Vista and XP
	Frequency Band	2.4 GHz
	Data Rates	802.11b: 1, 2, 5.5, 11 Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps
	Modulation	Direct Sequence Spread Spectrum DBPSK, DQPSK, CCK, OFDM
	Security[1]	Supports 64- and 128-bit WEP, WPA, WPA2, hardware-accelerated AES, 802.1x authentication types EAP-TLS, EAP-TTLS, PEAP-GTC, PEAP-MSCHAPv2, LEAP, EAP-FAST. Support for Cisco Security Features (proven compatibility with Cisco Aironet infrastructure products through the Cisco Compatible Extensions Program Version 4) with Microsoft Windows Vista and XP only.
	Sub-channels	Multinational support with frequency bands and channels compliant to local regulations.
	Media Access Protocol	CSMA/CA (Collision Avoidance) with ACK
	Network Architecture Models	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)
	Roaming	IEEE 802.11 compliant roaming between access points
	Output Power (for CCK)[2]	17 dBm , nominal
	Output Power (for OFDM; power varies by data rate)[2]	15 dBm , nominal

Power Consumption	Idle associated: 250 mW Idle unassociated: 150 mW Transmit: 2.0 W (max) Receive: 2.0 W (max)	
Power Management	ACPI compliant power management 802.11 compliant power saving mode	
Receiver Sensitivity[3]	54 Mbps: -71 dBm, 11 Mbps: -85 dBm , 1 Mbps: -95 dBm	
Antenna type	High efficiency dual band antenna with spatial diversity, mounted in the display enclosure	
Form Factor	PCI-Express Half-MiniCard	
Weight	0.013 lb (6 g)	
Dimensions	0.19 x 1.06 x 1.18 in (4.75 x 26.8 x 30 mm)	
Operating Voltage	3.3v +/- 10%	
Temperature	Operating Non-operating	14° to 149° F (-10° to 65° C) -40° to 176° F (-40° to 80° C)
Humidity	Operating Non-operating	10% to 90% (non-condensing) 5% to 95% (non-condensing)
Altitude	Operating Non-operating	0 to 10,000 ft (3,048 m) 0 to 50,000 ft (15,240 m)
LED Activity	LED Off - Radio OFF; Solid LED On - Radio ON	

1. Check latest software/driver release for updates on supported security features.
2. Maximum output power may vary by country according to local regulations.
3. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CCK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).
4. WLAN supplier's client utility is required for Cisco Compatible Extensions support with Microsoft Windows XP. WLAN may also be compatible with certain third-party software supplicants. WLAN supplier IHV extensions required for Cisco Compatible Extensions support for Microsoft Windows Vista.

HP Integrated Module with Bluetooth 2.1 Wireless Technology

Bluetooth Specification	2.1 Compliant
Dimensions	1.18 x 0.26 x 0.13 in (30 x 6.5 x 3.25 mm)
Frequency Band	2402 to 2480 MHz
Number of Available Channels	79 (1 MHz) available channels
Data Rates and Throughput	3 Mbps data rate; throughput up to 2.17 Mbps Synchronous Connection Oriented links up to 3, 64 kbps, voice channels Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric or 1306.9 kbps symmetric
Transmit Power	-6 dBm to 4 dBm (Bluetooth Class II)
Receiver Sensitivity	Better than -80 dBM at 0.1 % raw bit error rate
Power Consumption	Peak (Tx) 264 mW Peak (Rx) 231 mW Sleep <1 mW
Antenna	Internally integrated within module

Range	Up 33 ft (10 m)	
Electrical Interface	USB 2.0 compliant	
	Microsoft Windows Plug and Play compliant	
Bluetooth Software Supported	Broadcom Bluetooth for Windows	
	Microsoft Windows Bluetooth Software	
Link Topology	Point to Point, Multipoint Pico Nets up to 7 slaves	
Security	Full support of Bluetooth Security Provisions	
Power Management	Microsoft Windows ACPI, and USB Bus Support	
	Self configurable to optimize power conservation in all operating modes, including Standby, Hold, Park, and Sniff	
Certifications	All necessary regulatory approvals for supported countries, including:	
	FCC (47 CFR) Part 15C, Section 15.247 & 15.249	
	ETS 300 328, ETS 300 826	
	Low Voltage Directive IEC950	
	UL, CSA, and CE Mark	
Temperature	Operating	-4° to 158° F (-20° to 70° C)
	Non-operating	-40° to 176° F (-40° to 80° C)
Humidity	Operating	10% to 90%
	Non-operating	5% to 95%
Altitude	Operating	15,000 ft (4,572 m)
	Non-operating	40,000 ft (12,192 m)
Bluetooth Profiles Supported	Serial Port Profile (SPP)[1]	
	Service Discovery Applicaton Profile (SDAP)	
	Dial-Up Networking (DUN)[1,2]	
	Generic Object Exchange Profile (GOEP)[1,2]	
	Object Push Profile (OPP)[1,2]	
	File Transfer Profile (FTP)	
	Synchronization Profile (SYNC)	
	Hard Copy Cable Replacement (HCRP)[1,2]	
	Personal Area Networking Profile (PAN)[1,2]	
	Human Interface Device Profile (HID)[1,2,3]	
	FAX Profile (FAX)	
	Basic Imaging Profile (BIP)[2]	
	Headset Profile (HSP)	
	Hands Free Profile (HFP)	
	Advanced Audio Distribution Profile (A2DP)	

[1] indicates the profile is supported by Microsoft Windows XP SP2
[2] indicates the profile is part of Windows Vista

Environmental Data

Eco-Label Certifications

This product has received or is in the process of being certified to the following approvals and may be labeled with one or more of these marks:

- US Energy Star
- IT ECO declaration
- EPEAT - Gold where HP registers commercial desktop products. See http://www.epeat.net for registration status in your country.

System Configuration

The configuration used for the Energy Consumption and Declared Noise Emissions data for the Convertible Mini tower Desktop model is based on a "Typically Configured Notebook"

Energy Consumption	115 VAC	230 VAC	100 VAC
Normal Operation	11.54 W	12.28 W	11.53 W
Sleep (Energy Star low power mode)	0.96 W	1.13 W	0.95 W
Off	0.67 W	0.82 W	0.66 W

Heat Dissipation*	115 VAC	230 VAC	100 VAC
Normal Operation	39 BTU/hr	42 BTU/hr	39 BTU/hr
Sleep	3 BTU/hr	4 BTU/hr	3 BTU/hr
Off	2 BTU/hr	3 BTU/hr	2 BTU/hr

* Heat dissipation is calculated based on the measured watts, assuming the service level is attained for one hour.

Declared Noise Emissions (in accordance with ISO 7779 and ISO 9296)

System Fan Off	Sound Power (LWAd, bels)	Sound Pressure (LpAm, decibels)
Idle	3.5	26.4
Fixed Disk (random writes)	3.6	26.4

System fan is usually off except when charging the battery

Batteries

This battery(s) in this product comply with EU Directive 2006/66/EC

Batteries used in the product do not contain:

- Mercury greater the 5ppm by weight
- Cadmium greater than 10ppm by weight

The battery type and chemistry used in the product is:
CR2032 (coin cell), Li-ion
6-cell high capacity Lithium-Ion battery (optional 8 cell available)

Additional information

This product is in compliance with the Restrictions of Hazardous Substances (RoHS) directive - 2002/95/EC.

This HP product is designed to comply with the Waste Electrical and Electronic Equipment (WEEE) Directive - 2002/96/EC.

This product is in compliance with California Proposition 65 (State of California; Safe Drinking Water and Toxic Enforcement Act of 1986).

This product is in compliance with the IEEE 1680 (EPEAT) standard at the Gold level, see: www.epeat.net

Plastics parts weighing over 25 grams used in the product are marked per ISO 11469 and ISO1043.

This product contains 0% post consumer recycled plastic (by wt.)

This product is greater than 90% recycle-able when properly disposed of at end of life.

Packaging Materials

- External:
  - Paper 97 g
- Internal:
  - Polyethylene low density solid 13 g
  - Molded Pulp 100 g
  - Polyethylene low density 4 g
- The paper material is made from 80% recycled content.
- The Polyethylene low density solid is made from 100% recycled content.
- The Molded Pulp is made from 80% recycled content.
- The Polyethylene low density material is made from 4% recycled content.

HP follows these guidelines to decrease the environmental impact of product packaging:

- Eliminate the use of heavy metals such as lead, chromium, mercury and cadmium in packaging materials.
- Eliminate the use of ozone-depleting substances (ODS) in packaging materials.
- Design packaging materials for ease of disassembly.
- Maximize the use of post-consumer recycled content materials in packaging materials.
- Use readily recyclable packaging materials such as paper and corrugated materials.
- Reduce size and weight of packages to improve transportation fuel efficiency.
- Plastic packaging materials are marked according to ISO 11469 and DIN 6120 standards.

Material Usage

This product does not contain any of the following substances in excess of regulatory limits (for reference of these limits please refer to the HP General Specification of the Environment" (http://www.hp.com/hpinfo/globalcitizenship/environment/supplychain/gen_specifications.html):

- Asbestos

- Certain Azo Colorants
- Certain Brominated Flame Retardants - may not be used as flame retardants in plastics
- Cadmium
- Chlorinated Hydrocarbons
- Chlorinated Paraffins
- Formaldehyde
- Halogenated Diphenyl Methanes
- Lead carbonates and sulfates
- Lead and Lead compounds
- Mercuric Oxide Batteries
- Ozone Depleting Substances
- Polybrominated Biphenyls (PBBs)
- Polybrominated Biphenyl Ethers (PBBEs)
- Polybrominated Biphenyl Oxides (PBBOs)
- Polychlorinated Biphenyl (PCB)
- Polychlorinated Terphenyls (PCT)
- Polyvinyl Chloride (PVC) - except for wires and cables, and certain retail packaging has been voluntarily removed from most applications.
- Radioactive Substances
- Tributyl Tin (TBT), Triphenyl Tin (TPT), Tributyl Tin Oxide (TBTO
- Nickel finishes that release greater than 0.5 micro-grams/cm^2/week, measured according to EN 1811:1998, are not used on any product surface designed to be frequently handled or touched by users.)

End-of-life Management and Recycling	Hewlett-Packard offers end-of-life HP product return and recycling programs in many geographic areas. To recycle your product, please go to: http://www.hp.com/go/reuse-recycle or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner. The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard web site at: http://www.hp.com/go/recyclers. These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment.
Hewlett-Packard Corporate Environmental Information	For more information about HP's commitment to the environment: Global Citizenship Report http://www.hp.com/hpinfo/globalcitizenship/gcreport/index.html Environment website http://www.hp.com/environment Eco-label certifications http://www.hp.com/hpinfo/globalcitizenship/environment/productdesign/ecolabels.html ISO 14001 certificates: http://www.hp.com/hpinfo/globalcitizenship/environment/operations/envmanagement.html

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